

NAVIGATIONAL SCIENCE

OCEANOGRAPHY

MARITIME SECURITY

CHART CONSTRUCTION

AIR NAVIGATION

LITHOGRAPHY



D I S T R I B U T I O N

SUPPLY ... FISCAL

ADMINISTRATION

COMPUTATION

UNITED STATES NAVY
HYDROGRAPHIC OFFICE



f o r e w o r d . . .

Since the establishment of the United States Navy Hydrographic Office, its accomplishments in improving the means of safe navigation have in great measure depended upon the contributions of countless individuals and groups throughout the world.

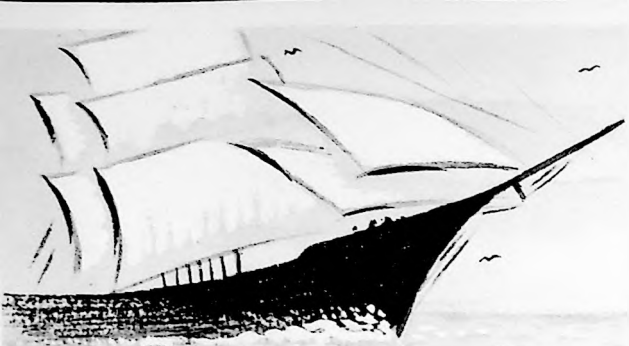
Among them are included mariners, scientists, engineers, technicians, and other observant and cooperative people. Inventors and research workers have participated in developing new devices and knowledge. Educators have trained skilled workers in many fields relating to nautical and aeronautical charting. Industrial organizations and professional societies have shared the results of their efforts. Individual mariners, explorers, and even seashore vacationers have submitted observations which contribute to a further understanding of the seas.

It is hoped that, by acquainting the reader with the major efforts, accomplishments, and organization of the United States Navy Hydrographic Office, new means of adding to the already growing funds of knowledge may be discovered. Present observers and cooperating organizations may recognize ways of improving their services or the Navy Hydrographic Office's services to the Nation, and other interested individuals and groups may become aware of a need for information or services which they have to offer.



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HISTORICAL

For centuries, five-sevenths of the earth's surface—the oceans—represented only a vast unknown. Man confined his travels to land and the narrow stretches of water along the coasts. Finally, a few early explorers braved the open seas, with little to guide them except their own faith.

Within a comparatively short time, the oceans assumed great importance. A nation's wealth was measured by its commercial shipping, and its strength by the size of its navy. Still, the unanswered questions of what conditions might be encountered on a voyage, or what to expect upon the hoped-for landfall, made the seafaring man a symbol of adventure—and danger.

Gradually, a few commercial concerns started selling navigational charts and instruments. The instruments were usually untested, and often were inaccurate. The charts were deficient and out of date. Many of these navigational aids developed their flaws or became obsolete while in storage waiting to be sold.

In 1830, the U. S. Navy rented a house in Washington, D. C., and established a Depot of Charts and Instruments. The original idea was that the depot would maintain a supply of navigational instruments and nautical charts for issue to naval vessels. The instruments would be tested and the charts kept up to date while in storage.

Soon it became apparent that the depot would be unable to obtain and maintain an adequate supply of the latest charts unless the depot, itself, undertook production of charts from original surveys. So, a lithographic press was installed.

1922—PHOTOGRAPHIC LABORATORY of the Hydrographic Office consisted of lone wooden camera used in photo-lithography. Camera was focused by sliding it along railing of the steel supports.



1839—EARLY CHART of islands off lower tip of South America was among the first produced by the Depot of Charts and Instruments. This original drawing was prepared by Lt. Charles Wilkes, who conducted the survey.



HIGHLIGHTS

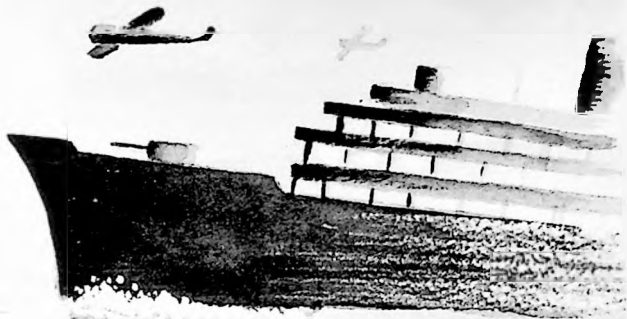
In 1837, four engraved charts were published from the results of a survey by Lieut. Charles Wilkes, who later gained great fame as leader of the United States Exploring Expedition. During the succeeding five years, eighty-seven similar charts were published and issued from the results of surveys by Wilkes and his officers.

These individual surveys, however, were naturally limited in their scope. A way was needed to gather information quickly and on a world-wide basis. The answer to this dilemma was supplied by a naval officer, who became known as "The Pathfinder of the Seas," Lieut. Matthew Fontaine Maury.

Maury assumed command of the depot in 1842. Possessing an active, scientific mind, he immediately recognized possibilities for expanding the services of the depot. He suggested that, if all shipmasters would submit reports of their experiences to some central agency, the data could be digested, compiled, and then published for the immense benefit of all. This idea became the basic formula of hydrographic offices throughout the world. It won the immediate approval of the navigators at sea. Within five years, twenty-six million reports poured in to a depot which originally had been intended only as a storehouse of charts and instruments.

As its functions expanded, the depot became known by many different names. In 1854, it was given the official name of "The United States Naval Observatory and Hydrographical Office." Later, in 1866, an Act of Congress separated the two functions, establishing the Hydrographic Office as a distinct activity. By

1945—SURVEY SIGNAL ON MT. SURIBACHI was planted there shortly after the historic flag raising. Crew members of the USS SUMNER, Hydrographic survey ship, erected the signal within range of Jap snipers.



1912—SINKING OF SS TITANIC, with loss of 1,517 lives, resulted from a collision with one of the icebergs mentioned in this message. The ship's master was not informed of the bergs although the TITANIC's radio operator relayed this warning from the German passenger liner AMERIKA to the Hydrographic Office.



this time, the Office's mission had expanded to include "the carrying out of surveys, the collection of information, and the printing of every kind of nautical chart or publication."

In fulfilling this extensive mission, the Office continued to grow throughout the remainder of the nineteenth century. In 1869, it commenced publishing the Notice To Mariners to provide navigators with corrections for their charts and publications. In 1882, the first Branch Hydrographic Office was established in Boston, Massachusetts, to take services directly to the customer. In 1889, a letter from the Hydrographer resulted in the formation of the U. S. Board on Geographic Names, to establish standards and eliminate confusion in place names around the world. By the turn of the century, "pleasure cruises" had become a safe and popular form of vacationing.

Suddenly, the attention of the world was drawn to an outstanding danger—ice! The collision of the TITANIC with an iceberg in 1912 prompted the Hydrographic Office to urge that an ice patrol be established to prevent such disasters. This recommendation eventually resulted in the formation of an International Ice Patrol, thereby bringing another hazard under control.

The task of the Hydrographic Office was far from completed, however. Features and conditions of the oceans are constantly changing, making their charting an evercontinuing process. This charting must constantly support the operational readiness and facility of every vessel or aircraft, wherever it might have to go.

The first World War created new demands for charts and information, demands which demonstrated the need for even greater accuracy. By 1922, the Navy had developed the first practical sonic sounding machine, making it possible to surpass all previous efforts in deep sea sounding and bathymetric charting. Aerial photography was employed by the Hydrographic Office for the first time that same year.

The science of photogrammetry, making possible precision mapping from aerial photographs, became an indispensable part of every major survey.

Following Pearl Harbor, the demands for charts increased to about forty times the normal pre-war rate. The Office was moved to more adequate facilities at Suitland, Maryland, about six miles southeast of the nation's Capitol Building, and was placed under the cognizance of the Chief of Naval Operations to insure that its activities were geared directly to vital programs.

Additional survey vessels were obtained. Each was equipped to conduct surveys and produce printed charts aboard ship in a minimum of time to keep up with fleet advances across the Pacific. At the peak of World War II, forty-three million charts were printed and issued in one year.

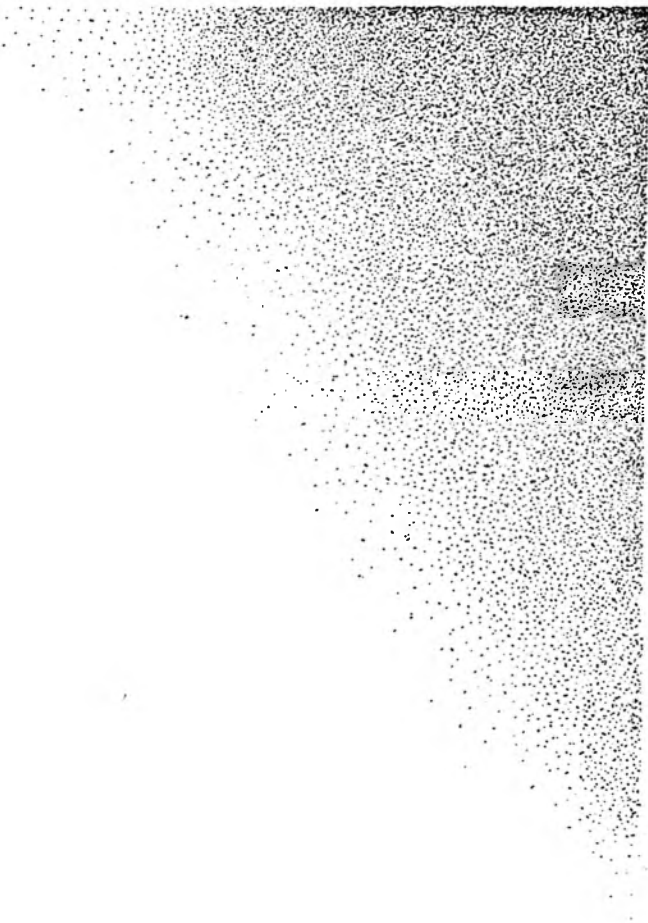
The Hydrographic Office has had to keep pace with such radical innovations as long range over-water aviation; development of radar, loran and other electronic devices for navigational purposes; new systems and methods of computing fixes from celestial observations; oceanographic research demanded for modern anti-submarine and amphibious warfare; and many other developments.

The modern navigator of today can prepare in confidence for a voyage to any part of the world. He has in advance of his departure, accurate information concerning routes, prevailing winds, ocean currents, fog or ice conditions, the coastline he will sight, and the available port facilities. Even underway, and miles at sea, today's mariner receives radio broadcasts, informing him of changing conditions or newly discovered dangers to navigation. Ocean liners arrive at their destinations with the same regularity as railroad trains. Airplanes cross the oceans and safely land on tiny, pin-point islands. Man's travels are no longer confined to land.



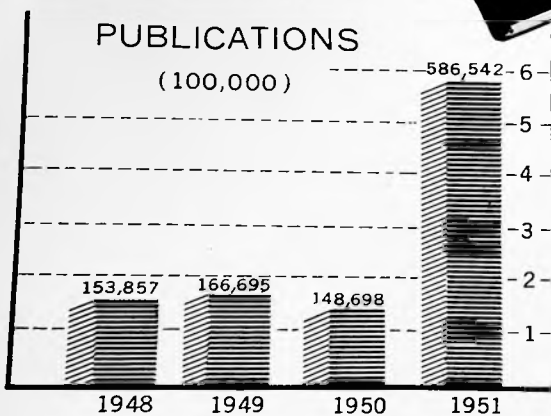
1951—PRESENT BUILDING was occupied by the Hydrographic Office in 1942. This three-story, brick structure is situated near Suitland, Maryland, about six miles southeast of the nation's Capitol.

Accomplishments

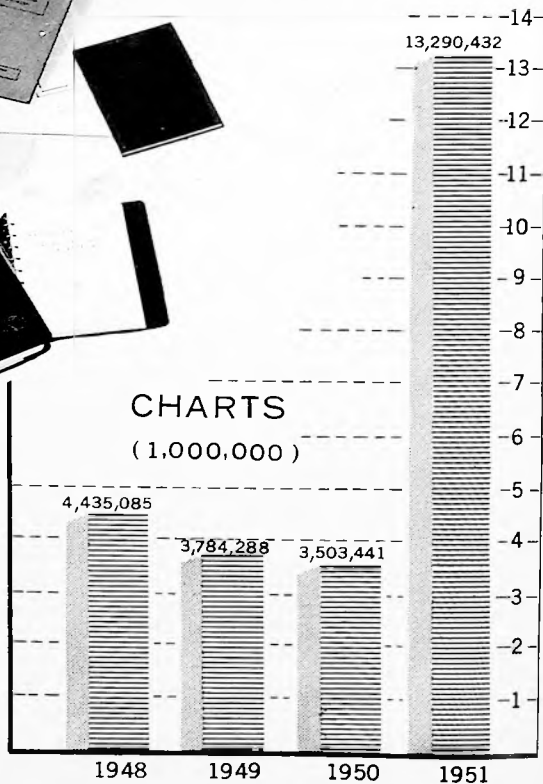
- 
- **performance**
 - **nautical charting**
 - **oceanographic
investigations**
 - **navigational safety**
 - **distribution**

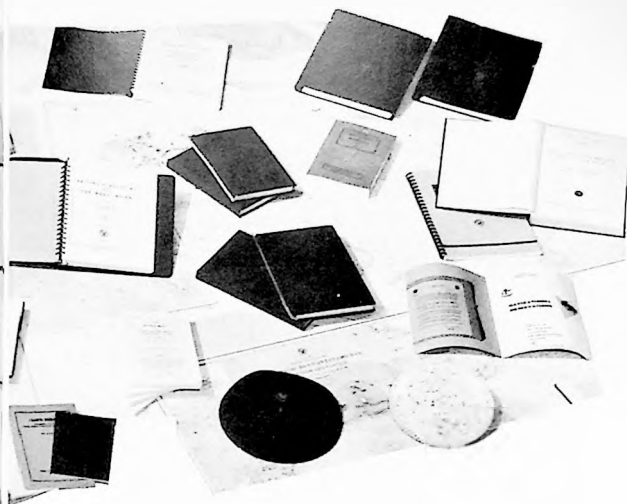


PUBLICATIONS
(100,000)



CHARTS
(1,000,000)





Performance

The world was still at peace when the Hydrographic Office planned its production schedule for the fiscal year 1951. Anticipating a year of calm, the office intended to undertake, in addition to its normal work load, a program of improving and expanding its products and services. New publications were to be developed and those already being offered were to be modernized and simplified in accordance with present needs of the Navy and commercial shipping.

Suddenly, only a few days before the beginning of fiscal year 1951, the North Koreans crossed the 38th parallel. Demands for charts and publications became almost overwhelming.

Numerous additional projects, concerned with naval operations in strategic areas, had to be undertaken. Heavy concentration was also required on classified projects geared directly to the support of the operating forces of the Navy.

Decision was made to establish a Navy Hydrographic Distribution Office at Clearfield, Utah, to accomplish West Coast and Pacific area distribution. Additional production and shipping were required to stock this new distribution office.

It was obvious that new personnel would have to be recruited to meet manpower requirements. A recruiting team visited numerous colleges and universities, showing films of hydrographic and oceanographic activities and interviewing members of the graduating classes. Through Civil Service and by direct recruitment methods, a total of 963 persons were recruited, more than doubling the personnel on board. Even so, in some cases military personnel and qualified workers from other agencies had to be temporarily assigned to assist in the effort. A night shift was added and the day shift worked overtime.

Throughout the entire Office, reorganization of divisions and replanning of schedules were effected to provide maximum utilization of work space and man hours. New systems of labor distribution and attendance recording were introduced. A local supply catalogue, listing all stock items essential to the operation of the Hydrographic Office, was distributed to facilitate ordering and issuing of supplies. Several thousand cubic feet of record material were removed from the files, and either destroyed or transferred to the National Archives and Naval Records Depository for storage.

The library staff was doubled to assist the research efforts of the technical and scientific staff of the Office, as well as other agencies in the area. An additional nurse was employed in the civilian medical dispensary to treat personnel who become ill or injured during working hours. Telephone calls skyrocketed to 4,000 per day as the emergency program pace hit full stride.

When total production figures were computed at the end of the year, it was clearly seen that the extra effort had produced results. All of the planned programs, and even the unanticipated projects, had been carried out according to schedule. In so doing, 13.3 million charts and 586,000 publications had been produced. The production for this one year alone had surpassed the combined total production of the previous three years—1948, 1949, and 1950.

Nautical Charting

Over 8.4 million nautical charts were printed by the Hydrographic Office during the past year. As these production figures indicate, the nautical charting activities were the first to receive the full impact of the Korean situation. Immediate steps had to be taken to supply fleet units with the latest available information for regular navigational charts and special charts required for naval warfare.

A review, based upon strategic considerations, was made of the priority needs for charts of all



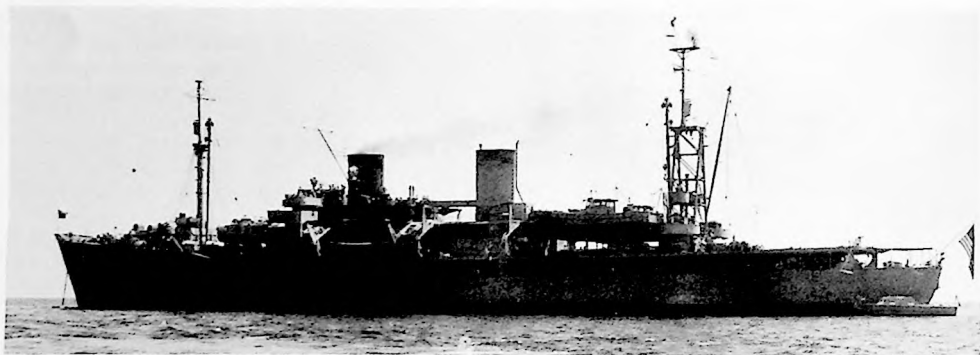
areas. From this review, priorities were established for the revision of existing charts and production of new charts.

All demands of the fleet for special operating charts, emergency reproduction of existing information, and all available details of the specific areas were met by the Hydrographic Office as requested.

To support this aggressive chart construction program, naval hydrographic surveys, headed by the USS MAURY and USS TANNER, reported new, original coverage of three widely separated areas: the Persian Gulf, Labrador, and the Bahamas. The latter area involved a special survey for an underwater cable route, requested by the U. S. Air Force in connection with the construction of a Long Range Proving Ground for guided missiles.

Increased emphasis on submarine and anti-submarine warfare stimulated the recording of oceanic soundings by units of the fleet. More than 840,000 miles of soundings were reported, approximately double the number of reports

NAUTICAL CHARTING PROGRAM of the Hydrographic Office includes all the navigable waters of the globe except the coastal areas of the United States and her possessions. These charts are distributed around the world to ships of the fleet, the merchant marine, and other maritime nations



CONTROL CENTER OF HYDROGRAPHIC SURVEYS, which collect original information to support Hydro's nautical charting program, are the USS MAURY (AGS-16), shown above, and her sister ship, the USS TANNER (AGS-15). These converted attack cargo ships are now equipped with drafting tables, printing presses, scientific instruments, 40' and 52' sounding boats, helicopters, camping equipment, lumber and steel for tower construction, and other related equipment

received during the previous year. More than 30,000 aerial photographs were also received during the year.

All of the original information gained during this period was used, or is being used, to support the nautical charting program of the Hydrographic Office, which includes special charting projects required by the Navy, special mapping projects undertaken in cooperation with the U. S. Army and the U. S. Air Force, and regular nautical chart coverage of all the navigable waters of the globe, exclusive of the coasts of the United States and its possessions.



TALL SIGNAL TOWERS and beacons are constructed on shore to serve as control points for the survey. A variety of surveying equipment, including theodolites, transits, and special alloy measuring tapes, are used in expanding a triangulation network to determine precise locations of these signals.



NEWEST MEMBER OF SURVEY TEAM is the valuable helicopter. These planes transport personnel and equipment to remote locations, conduct aerial reconnaissance and photography, and make emergency medical flights so that injuries may be treated on the spot.



OBSERVING ANGLES on survey signals ashore enables the crew of each sounding boat and survey ship to fix their exact position at any given moment of their sounding operations. This makes it possible to place each particular sounding accurately on the boat sheet from which the finished chart will grow.

Aeronautical Charting

Aeronautical services of the Hydrographic Office were revised and expanded during 1951 to meet new requirements resulting from recent developments and accomplishments of naval aviation. High speed, long range aircraft and new electronic navigational devices have made the task of supplying naval aviation with timely aeronautical charts and information not only more vital but more difficult.

Old products had to be modernized. Methods of presenting aeronautical information had to be improved. So, studies were made to determine the best methods of presenting charts for aeronautical use under modern conditions. Tests were made with type face, type sizes, legibility, contrast, topographic presentation, various colors of printing ink, various



CARTOGRAPHERS examine aerial photographs through a stereoscopic viewer. Evaluation of aerial photographs requires careful analysis of each topographic feature or landmark.

colors of chart paper, and the portrayal of instrument procedures under both daylight and red light. Such tests continue and results are still being examined and evaluated, to improve techniques and presentations.

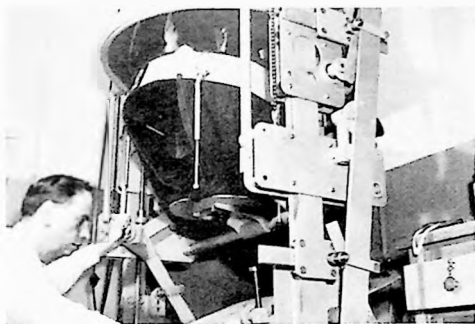
New projects were undertaken. One was a Seaplane Station Evaluation Project which is compiling and recording detailed information on seaplane facilities in certain geographic areas. Three new Seaplane Pilot's Handbooks were prepared and published, covering important seaplane facilities in the Mediterranean, Caribbean, and North Atlantic areas. These handbooks present Approach, Instrument Approach, and Landing Charts, supplemented by texts and photographs.

A total of approximately 15,000 items of aeronautical information was received and evaluated during the year. This information was used in the compilation and construction of more than 2.2 million Aeronautical, Loran, and Approach and Landing Charts which were produced by the Hydrographic Office to afford navigational safety and facility to aircraft operating over areas of strategic interest and importance to the United States Navy.

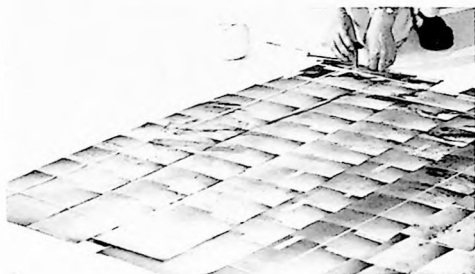
The Navy and the Air Force, working jointly, exchanged ideas and publications to reduce the pressure imposed upon both services by the increased need for aeronautical information.



AERONAUTICAL CHARTING PROGRAM of the Hydrographic Office includes all areas which are of interest to naval aviation. In actual practice, Hydro, as a member of the unified "defense team", produces charts for use by all military aviation forces.



RECTIFYING CAMERA corrects distortion of aerial photographs which was caused by tilting of plane and camera at time picture was taken. Modern photogrammetric equipment, such as this machine, plays a big part in improving the accuracy of modern charts and maps.



MOSAIC LAYOUTS are created by assembling aerial photographs on a flat platform. By carefully fitting these photographs together, a picture of a large area can be constructed.



AERIAL PHOTOGRAPHY has been an important source of navigational information since 1922 when scientific photogrammetry was first employed by the Hydrographic Office. This year, 30,000 aerial photographs were utilized in the preparation of nautical and aeronautical charts.

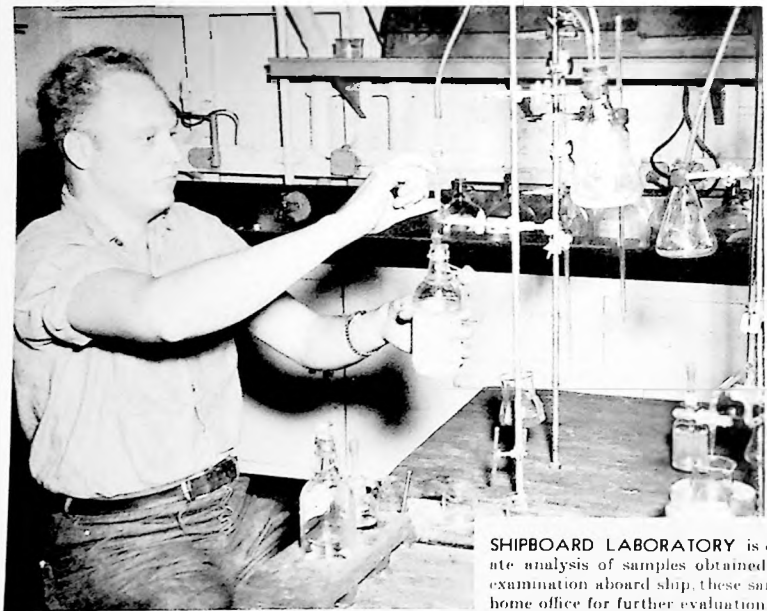


SEAPLANE LANDING AREAS are being studied and charted at the Hydrographic Office. This new project was initiated this year.

Oceanographic Investigations

Few people realize that every known characteristic of the oceans is being scientifically investigated and analyzed. Yet, these studies are extremely important, both to merchant shipping and the strategic interests of the Navy. In cooperation with other government agencies, oceanographic institutions, universities, and oceanographers of other nations, the Hydrographic Office is carefully studying ocean currents, temperatures, densities, bottom sediments, depths, sea and swell characteristics, and other related items of scientific interest.

Two oceanographic survey vessels, the USS SAN PABLO and the USS REHOBOTH, steamed more than 38,000 miles during the year conducting extensive hydrographic and oceanographic investigations along their routes. Among their contributions was the delineation of an undersea mountain range in the Atlantic Ocean, where peaks rise from the ocean floor at a depth of 11,000 feet to within 800 feet of the surface.



NANSEN BOTTLES are lowered to capture samples of ocean water at various depths, down to four miles. Reversible thermometers, attached to the bottles, will record water's temperature at the precise moment samples are obtained.

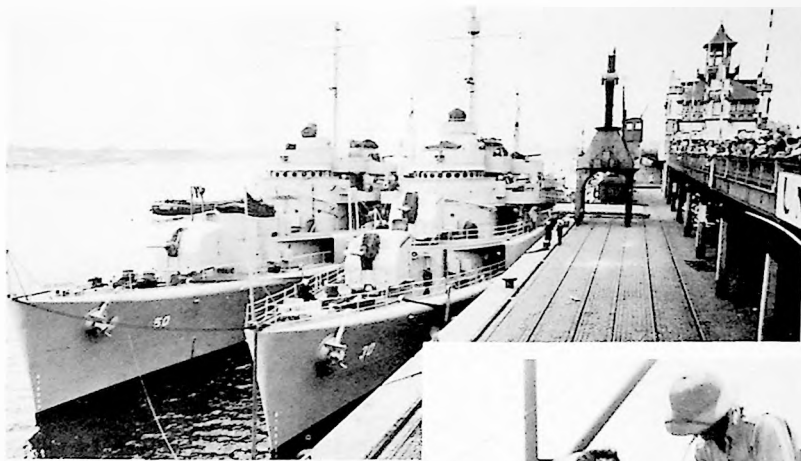
SHIPBOARD LABORATORY is equipped to permit immediate analysis of samples obtained at sea. After preliminary examination aboard ship, these samples will be forwarded to the home office for further evaluation.

Along with the organizations already mentioned, the Hydrographic Office commenced a modern study of the Gulf Stream in cooperation with Loran-equipped merchant tankers. The survey was conducted to determine whether the exact position of the Gulf Stream could be fixed more accurately on the charts to permit even greater utilization of the currents by coastal shipping. Preliminary findings indicate that the mean axis of the Gulf Stream appears to be approximately four to eight miles westward of the position now indicated on the charts.

Oceanographers from the Hydrographic Office also accompanied two Navy expeditions to the Arctic. Their observations were added to the Navy's rapidly growing fund of information about the Arctic areas.

In home waters, comprehensive oceanographic surveys were commenced in various harbors of the United States. This, like many of the other projects, was a cooperative undertaking involving several agencies, institutions, and universities.

The findings of these surveys were scientifically studied and processed aboard ship, and later by other oceanographic experts ashore. This information, along with information voluntarily submitted by merchant vessels and ships of the fleet, is recorded on punch cards to facilitate processing, sorting, and compiling. The files are now bulging with millions of these cards, each containing important oceanographic information which is readily accessible for reference or inclusion in charts and publications.



USS SAN PABLO (AGS-30) and USS REHOBOTH (AGS-50), oceanographic survey ships, attract a large crowd as they lay alongside the pier in Antwerp, Belgium. These ships steamed more than 38,000 miles during fiscal year 1951, conducting extensive hydrographic and oceanographic investigations along their route.



SAMPLE OF OCEAN BOTTOM is obtained by lowering a "snapper" to scoop up sediment from the ocean floor. These samples are placed in individual glass jars, and carefully analyzed to determine the origin and properties of the sediments.

Navigational Safety

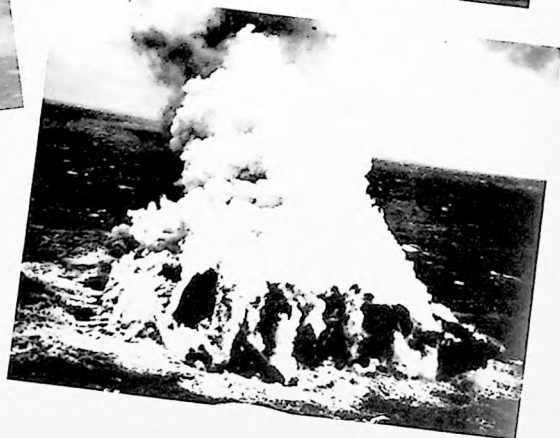
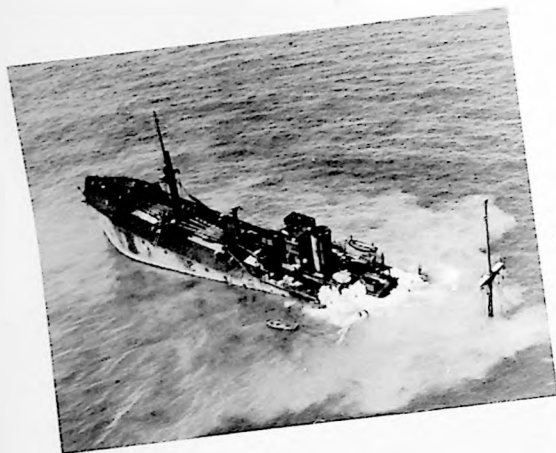
Ships at sea, and aircraft flying over the ocean, must be kept informed of all conditions which might affect their navigational safety. Methods of presenting this information were simplified and modernized during the past year as an important feature of the Hydrographic Office's effort to improve its products.

As in previous years, reports of changes in conditions or newly discovered hazards were distributed immediately to prevent unfortunate disasters. Approximately two thousand nautical, two thousand aeronautical, and three hundred ice warnings were prepared for broadcast by radio stations along the coasts. As further protection, memorandums, bulletins, and notices were also issued at periodic intervals.

In January of 1951, a new practice was adopted of issuing the Notice to Mariners

in two parts: Part I, Western Hemisphere (prepared jointly with the U. S. Coast Guard) and Part II, Eastern Hemisphere. This step was taken so that ships might receive only the information required for the correction of charts and publications of the area in which they are operating. This has effected an annual saving of approximately \$20,000.

As another important feature of the simplification and modernization effort, fundamental alterations were made in the format of Sailing Directions, publications which



DANGERS TO NAVIGATION often appear suddenly without warning, and constant vigilance is required to insure the navigational safety of overseas shipping. Shown here are (Top) large iceberg (Center) a derelict ship, and (Bottom) undersea volcanic mountain rising above the surface.

present detailed accounts of the navigational conditions in each particular area of the world. To facilitate the insertions of changes, Sailing Directions are now being issued in a new series of loose-leaf binders. At regular intervals, complete new pages will be issued to replace those on which corrections have been pasted. This will eliminate the necessity of issuing annual bound supplements or replacing complete bound volumes at frequent intervals.

A program for improving the Route Charts in the various volumes of Sailing Directions has also been adopted. The world was divided into five ocean areas, each with its own base chart. Hereafter, each volume of Sailing Directions will contain a single route chart, based on the particular base chart of the area in which it falls.

Graphic Indices, entirely new features designed to simplify references to publications, were introduced this year. They consist of a general diagram, located in the front of each book, showing the area described and the general limits of the various chapters. Individual chapter index diagrams show an enlargement of the specific area described, and indicate where information concerning an area may be found.

The simplification and modernization of these publications have won the appreciative approval of those at sea who must maintain the accuracy of their information to insure navigational safety.



READY TO ISSUE WARNINGS of navigational dangers to all ships and aircraft is this communications watch who stands by to receive or relay any notices of changing conditions or newly discovered hazards.



OLD SAILING DIRECTIONS were issued in case-bound volumes which could only be kept up to date by laboriously pasting in corrections. These books soon became unsightly and difficult to handle.

NEW SAILING DIRECTIONS are in loose-leaf format with morocco binders. They are kept up to date by the insertion of change pages which are issued at frequent intervals to replace obsolete material.

Distribution



FOUR MILLION HAND CORRECTIONS PER MONTH were added to charts of the Ready Reserve stock in an effort to insure that products being issued contain the latest available information. Any changes which have occurred, since the chart was printed, are added before the chart is sold or issued.

With the tremendous increase in the production output of the Hydrographic Office, the distribution of these products became a major problem. The Korean situation brought forth emergency demands for charts and publications. Complete allowances had to be supplied to ships being reactivated. Large shipments were also needed for the establishment of the Navy Hydrographic Distribution Office at Clearfield, Utah, which is being set up to accomplish west coast and Pacific area distribution.

One of the major hurdles was the need for millions of individual corrections to insure that the charts being issued were up to date. Any changes which have occurred since a chart was printed must be added by hand prior to the chart's distribution. To accomplish this, hand corrections were concentrated on charts of criti-

cal areas. More than four million hand corrections per month were averaged during most of the year.

Realizing that chart correction work was also increasing aboard ship, with the addition of hundreds of new charts, a new system of ship-board chart correction, devised by the Hydrographic Office during 1950, was placed in effect by the Fleet, resulting in a great saving of the man hours required to keep charts up to date. In addition, a change of chart portfolio allowances has been approved, and will soon be placed in effect, modernizing and improving chart coverage and reducing the number of charts aboard each ship.

Although additional personnel had to be recruited to accomplish the task, the Hydrographic Office met the demands of the fleet during an emergency year and, in addition, supplied complete chart and publication allowances for ships being reactivated and maintained scheduled shipments to Clearfield.

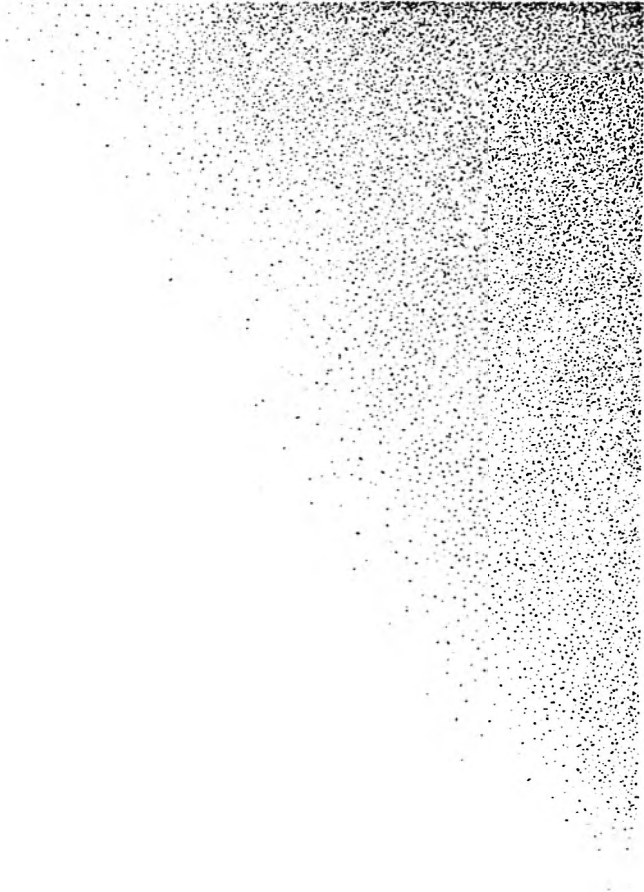


SKIDS OF FINISHED CHARTS stand in distribution area awaiting placement on the shelves of Ready Reserve stock. Approximately 350 copies of each chart are maintained on these shelves at all times, ready for sale or issue.

OLD AND NEW methods of packaging charts for shipment are contrasted in the picture below. New, compact box contains approximately the same number of charts as the large stack of rolls

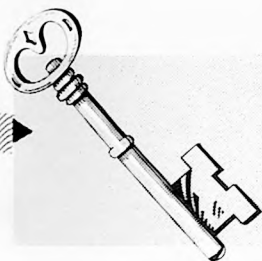


Organization

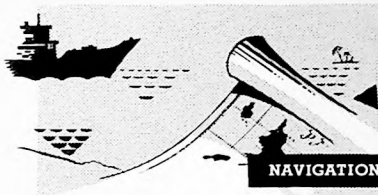
- 
- maritime security
 - oceanography
 - air navigation
 - navigational science
 - chart construction
 - lithography
 - distribution
 - supply
 - fiscal
 - administration
 - computation



CHIEF ENGINEER



SECURITY



NAVIGATIONAL SCIENCE

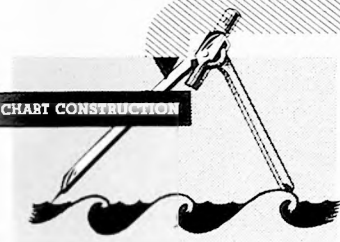
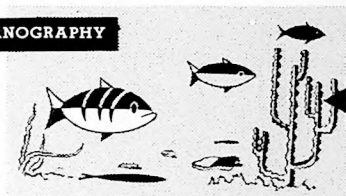


CHART CONSTRUCTION

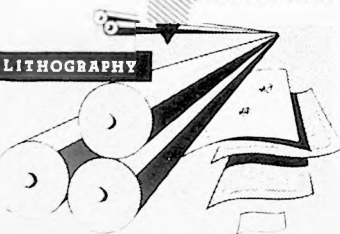
OCEANOGRAPHY



AIR NAVIGATION

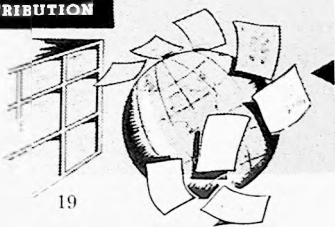


MARITIME SECURITY



LITHOGRAPHY

DISTRIBUTION



MARITIME SECURITY



IF THIS LIGHT GOES OUT, or changes in any way, the Division of Maritime Security must notify navigators in that area immediately. The safety of overseas shipping rests in the hands of the experienced mariners in this division who maintain a constant vigilance over all navigational information.



The Division of Maritime Security is responsible for the navigational safety of shipping on the high seas. Warnings of immediate dangers and changes in aids to navigation reach the mariner through radio broadcast and periodicals. In addition, the division publishes volumes of sailing directions, providing the navigator with descriptions of all the coasts of the world, except those of the United States, and produces such books as Radio Navigational Aids, Light Lists, Table of Distances Between Ports, and perhaps the best known of all the Hydrographic Office publications—the Pilot Chart.



WARNINGS OF IMMEDIATE DANGERS are originated over Hydro's teletype circuit. Navy and Coast Guard radio stations along the coasts broadcast these messages to all the ships at sea.

SAILING DIRECTIONS present textual descriptions of the navigational conditions in any area of the world. Only the United States and her possessions, which are charted by the U. S. Coast and Geodetic Survey, do not come under the navigational responsibility of the Hydrographic Office



NOTICE TO MARINERS is issued weekly to provide navigators with timely corrections for their many charts and publications. Each of the navigational experts in the Division of Maritime Security must have five years' prior experience as an officer aboard a merchant or naval ship.

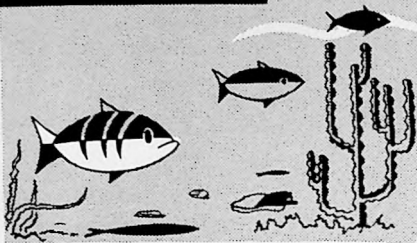
GEOGRAPHIC NAMES on all charts and publications must be checked to make sure that they agree with accepted place names around the world. The Hydrographic Office acts as the Navy's representative on the U. S. Board on Geographic Names which determines these standards.



PILOT CHARTS are among the oldest and best known of all Hydrographic Office products. On the face of these charts, ocean conditions such as currents and winds are portrayed graphically. The reverse side of the chart carries professional articles of interest to navigators and mariners.



OCEANOGRAPHY



The Division of Oceanography plans and conducts oceanographic surveys to obtain basic data for the solution of problems related to the nature of wave generation, ocean currents, sedimentary processes and weather influence. In addition, specialized investigations are conducted to determine the effect of the ocean's chemical, physical, and biological properties upon certain equipments and installations. From these data, and that obtained from cooperating activities, reports and publications are prepared dealing with the marine characteristics of various areas, and their probable effect on military and commercial operations.

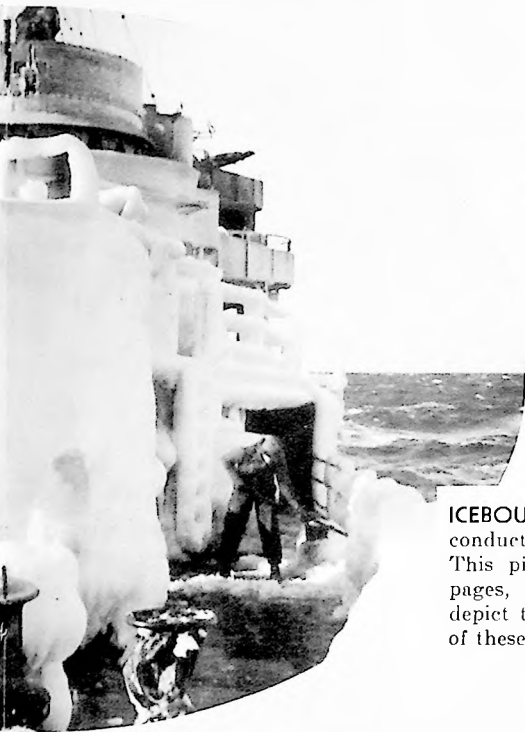


PLOTTING OCEANOGRAPHIC DATA, this oceanographer records tabulated data which has been processed by electronic calculating machines. By use of these machines, the Division of Oceanography has been able to undertake many projects which otherwise would have been economically impossible.

VOLCANIC ROCK, dredged from the bottom of the ocean by the USS REHOBOTH, is handled with care by the scientists and officers aboard the oceanographic survey ship. Inspection of this valuable specimen indicated that it had been resting on a rock-strewn, undersea mountain.

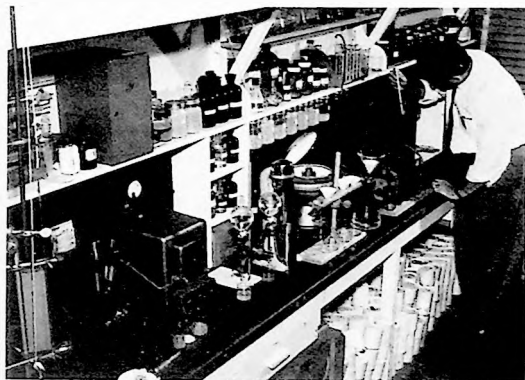


CORING DEVICE is lowered to the ocean floor to obtain a long core of bottom sediment for analysis. These cores, which are often 30 feet long, have extended our knowledge of the geological history of the ocean floor for thousands of years into the past.



ICEBOUND OCEANOGRAPHIC SURVEY SHIP conducts investigations in the North Atlantic. This picture contrasts with others on these pages, taken in more temperate climates, to depict the far range and wide-spread coverage of these oceanographic surveying operations.

FINAL ANALYSIS of oceanographic samples is made in the laboratory at the Hydrographic Office in Suitland, Maryland. These findings will be compiled for inclusion in future charts and publications.



AIR NAVIGATION



Aeronautical charts and publications of the Hydrographic Office are prepared within the Division of Air Navigation. The division collects, evaluates and maintains up to date files on aeronautical flight and facility information for all areas which are of interest to the Navy. This compiled material is utilized in the preparation of charts, related publications, special studies, radio broadcasts which warn aviators of immediate dangers to aerial navigation, and periodical notices and bulletins which list changes or additions to aeronautical information already distributed.

IMMEDIATE HAZARDS to air navigation are noted on charts and disseminated to all aircraft in the area by radio broadcasts called NOTAMS. Approximately two thousand such warnings were broadcast this year.

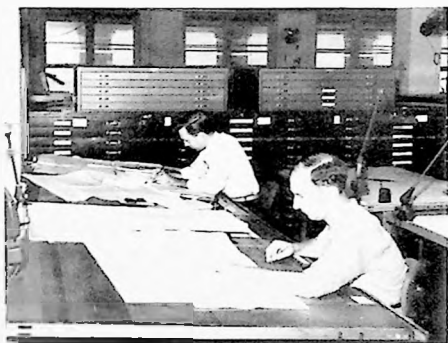


AERONAUTICAL INFORMATION is forwarded to the Hydrographic Office by many means, including two teletype machines which operate continuously. Over 15,000 items of aeronautical information were received and evaluated during the past year.

MAKING CHANGES on new editions of aeronautical charts, these air navigation specialists check an aerial photograph for the latest available information. More than 2.2 million aeronautical, loran, and approach and landing charts were produced by the Hydrographic Office in 1951.

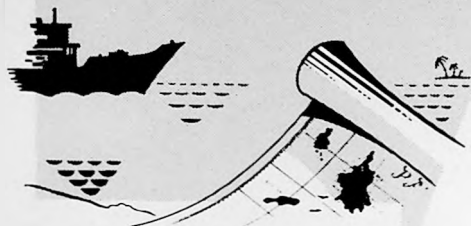


DETAILED EVALUATION of aeronautical information is made by area specialists. Each of these specialists keeps a close check on the navigational conditions in the area under his cognizance.



COMPILING INFORMATION for new aeronautical charts, cartographers study nautical charts and other references to obtain accurate details of all known features. Hydro's aeronautical charts must afford navigational safety and facility to all aircraft operating over areas of strategic interest or importance to the Navy.

NAVIGATIONAL SCIENCE



SPECIAL REQUESTS for answers to knotty navigational problems are referred to the Division of Navigational Science. This hypothetical letter was prepared as a sample of the more simple problems submitted to this division for investigation.

U.S. Navy Hydrographic Office
Washington 25, D. C.

Dear Sir,

I am forwarding the facts of what appears to be an unusual case of error between EA position and observed position.

On March 1, 1951, the 3rd Mate observed the sun's meridian altitude and with the sun's position line brought up from the morning observation, obtained the noon position of lat. 37°04'N, long. 61°08'W. This showed the vessel on her course. Wind and sea calm, square 3000, speed 10k, bar steady, temp air 61.5°, sea temp 70°.

When evening observations were taken on same day vessel was more than 15 miles north of her course, or at lat. 39°04'N, long. 60°08'W. This indicated a set to the NE of about 1-3 knots. These observations were checked by 1st Mate and confirmed by Master Captain M.A. Jones with a different set of stars. A SW by wind had come up in the afternoon of force 3. Allowances were thus made in determining the new course of 290°.

Morning sights on March 2, again showed the vessel to be on her new course, but now 8 miles to the south. The wind was still but had abated somewhat during the night. Barometer steady, air temp 50.2°, sea temp 77°. Her course was again altered, this time to 285°.

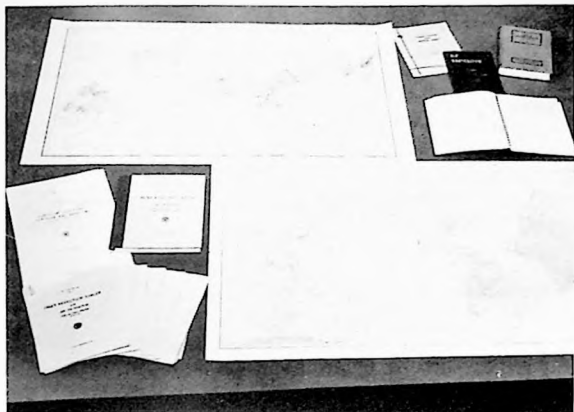
Noon observations of same day showed the vessel to be on her old course, or 300°. All sights were worked with HO 214, and checked with Mars St. Elia's Nautical Almanac. Star observations are given on separate sheet.

We would be very glad if you would offer an explanation for this peculiar happening.

Sincerely,
Master: *M. Jones*



NAVIGATIONAL SCIENTIST pores over lengthy tables in search of solution to a navigational problem. Both practical and theoretical research is necessary in the development of new navigational methods, facilities and devices.



DISPLAY OF PRODUCTS of the Division of Navigational Science include the world famous Bowditch, Loran charts, and current sight reduction tables now in preparation.

NAVIGATIONAL REFERENCES by the thousands are stored in these locked files in the Division of Navigational Science. Researchers in this division sometimes refer to scores of books and articles in the course of one day's effort.



NEW NAVIGATIONAL AIDS are forwarded to the Division of Navigational Science for evaluation. Shown here are a few instruments, devices and models designed to aid navigators and chart makers.

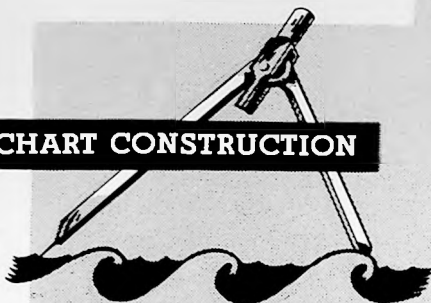
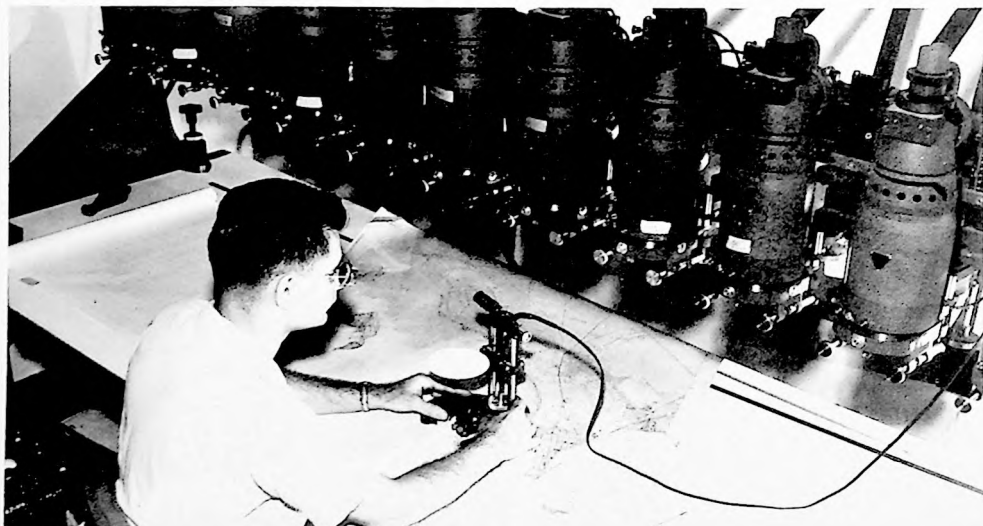
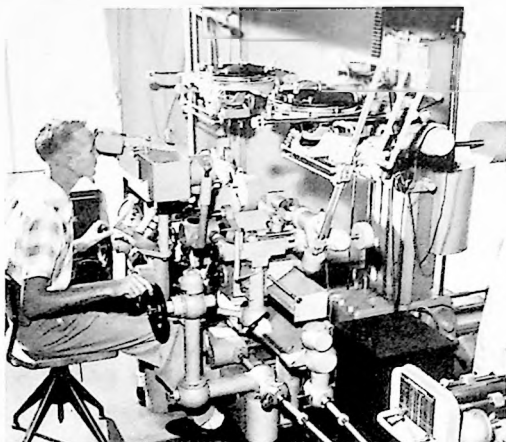


CHART CONSTRUCTION

THREE DIMENSIONAL VIEW of earth's surface is studied by this photogrammetrist as he inspects aerial photographs through a stereoplanigraph. Use of this machine greatly increases the accuracy of charts and maps produced by the Division of Chart Construction.

PROJECTED IMAGE of chart or map, being used as source material, is enlarged or reduced to any desired scale by this machine. Draftsmen trace this projected image, and use it in the preparation or revision of new charts

The Hydrographic Office must compile, construct, and constantly revise nautical charts covering the navigable waters of the globe. The Division of Chart Construction plans and directs the hydrographic and aerial photographic surveys conducted by the Navy and compiles, computes and drafts the hydrographic, geodetic, and geophysical data acquired during these surveys and from other sources throughout the world.





COMPILATION MOSAIC chart is prepared by photographing various nautical charts or maps so that film positives may be obtained and fitted together to form a complete coverage of an area.

SHADED RELIEF is added to a nautical chart by this skilled draftsman. Contrasted on the wall in background are (Left) a whale chart produced by LT Maury shortly before the Civil War and (Right) one of Hydro's more recent nautical charts.



OCEANIC SOUNDINGS are plotted in the Survey Branch of the Division of Chart Construction. More than 840,000 miles of sounding lines were reported during fiscal year 1951.

LITHOGRAPHY

Most products of the Hydrographic Office are printed by lithographic reproduction. This is the most versatile type of printing for graphic illustrations, and allows the use of plates which are inexpensively produced and easily changed or revised. Once an original drawing is finished, the Division of Lithography photographs it and prepares a lithographic plate from the photographic negative. After the plates are used, they are stored along with the negatives in indexed files, thus providing an available and durable record of Hydrographic Office charts and publications. Unless extensive changes have occurred since the chart was prepared, a lithographic plate may be withdrawn from the files and corrected according to the latest information before it is used for additional press runs, thereby insuring the accuracy and timeliness of the printed charts.

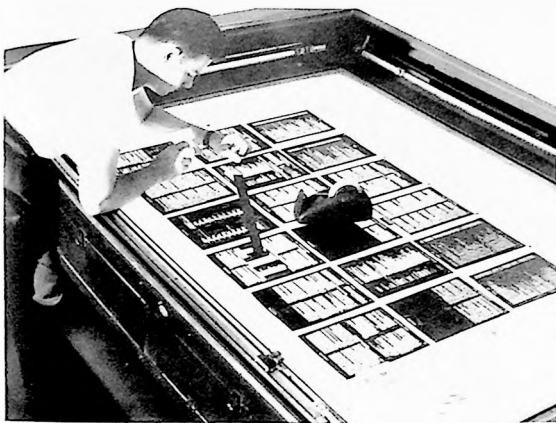
MULTI-COLORED CHARTS are prepared by masking individual areas on the printing plate for each press run. In this picture, a lithographic draftsman is inking a mask of the areas which have been shaded on the color guide.



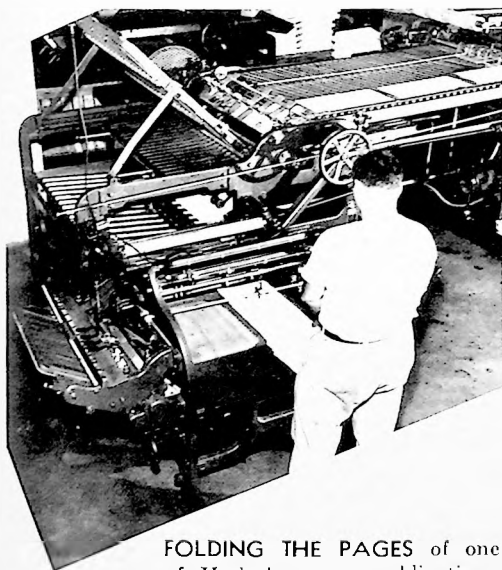
GLASS NEGATIVE is studied soon after being removed from camera. These negatives are used in the preparation of the lithographic plate, from which the finished chart will be printed.



FINAL CHECK of the glass negative is made, and individual changes or corrections added by engraving with a special stylus. Photo-lithography has been used at the Hydrographic Office since before the turn of the century, allowing the use of negatives and plates which are inexpensively produced and easily changed or revised.



SETTING UP one of Hydro's many publications, this lay-out man strips film negatives of individual pages into position for processing of zinc plate.

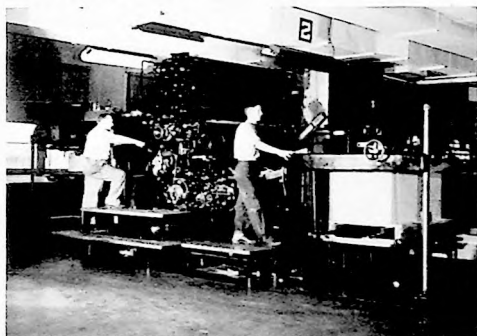


FOLDING THE PAGES of one of Hydro's many publications, this machine helps speed the issue of timely information.

PRINTING ON CELLOPHANE SHEET, is a time and labor saving development of the Hydrographic Office for lettering charts.



These sheets are later waxed, and printed matter is cut from them and pressed onto the original drawings.



ONE OF HYDRO'S 13 PRESSES prints the finished chart. After the plates are used on these presses, they are stored, along with the negatives, in indexed files, for future reference or press runs.

DISTRIBUTION



In the Division of Distribution, the final objective of the Hydrographic Office, the distribution of its products, is accomplished. This Division also sets the wheels of the production plant in motion for it is here that most of the procurement schedules for charts and publications originate. To replenish stocks maintained by them, the Division of Distribution initiates the requisitions for the printing of charts and publications which are produced by the Hydrographic Office. In addition, it orders charts and publications from other producing activities such as the Coast and Geodetic Survey and the U. S. Air Force for distribution to naval activities. The division also exercises technical supervision of the Branch Hydrographic Offices, Hydrographic Sales Agencies, and the Hydrographic Liaison Office.



ALL THE NAVIGABLE AREAS OF THE WORLD are covered by the charts on these shelves in the Division of Distribution. Charts and publications of other agencies are purchased and kept ready for distribution, to supplement the Navy's own coverage.



AREA PORTFOLIOS are prepared by assembling all the charts necessary for navigation in the waters of that area. Each ship of the Navy has access to a complete file of portfolios and library of publications for its operating area.

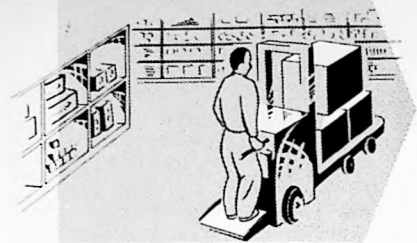


ORDERS AND REQUESTS are processed on tabulating machines and placed in these long tub files. The Division of Distribution selects the charts and publications listed on each of these cards, and effects the necessary sale or issue.

ADDRESSING MACHINES simplify the task of mailing charts and publications to a standard distribution list. Approximately 10,000 coded plates, each containing a separate address, are kept on file and used regularly by the Division of Distribution.



SUPPLY . . .



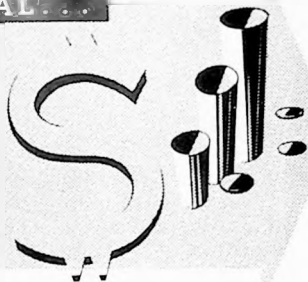
In order to supply the fleet and commercial shipping with the necessary navigational aids, the Hydrographic Office, itself, must be kept supplied with essential equipment and materials. The Supply Division procures, receives, stores, and issues supplies, equipment, and material required for the Hydrographic Office and its field activities. It also operates and controls the transportation, hauling, storage, and warehouse facilities. Keeping pace with the increasing activities of other divisions, the Supply Division has undergone a complete reorganization and is now functioning in accordance with the Navy Standard Supply Organization.

SUPPLY ROOM employees keep a close check on all items which are essential to the operation of the Hydrographic Office. The Supply Division must also provide the necessary equipment for Branch Hydrographic Offices and survey ships.

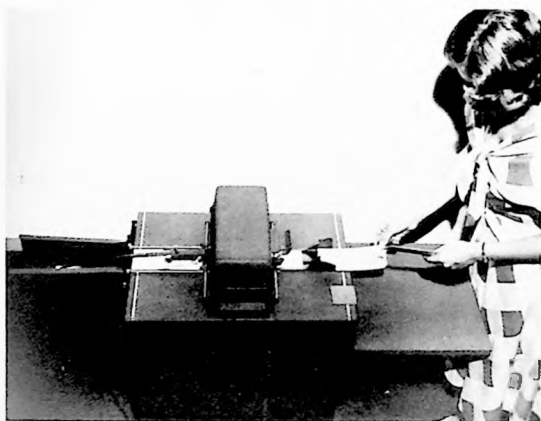
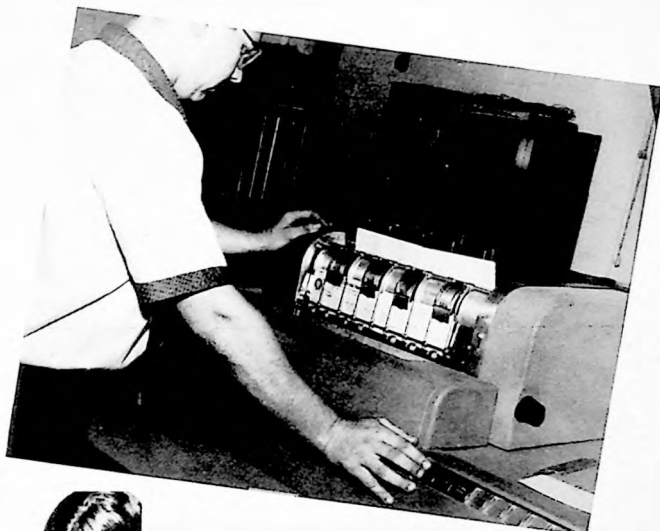


TONS OF PAPER are used by the Hydrographic Office in the printing of its charts and publications. Here an employee of the Supply Division removes a crated skid of paper sheets from the warehouse.

FISCAL...



PRODUCTION OF PAYROLL and paychecks was undertaken by the Hydrographic Office this year. Use of electronic equipment has facilitated many operations of the Fiscal Division, including the accounting of material and labor charges.



As Budget Activity 5 under the appropriation "Service-Wide Operations Navy," the Hydrographic Office was appropriated \$11,183,000 for fiscal year 1951. These funds were administered by the Fiscal Division to operate the U. S. Navy Hydrographic Office, Branch Hydrographic Offices, Navy survey ships which operate under the technical control of the Hydrographic Office, and for the purchasing of materials from other producing agencies. The Fiscal Division controls and is responsible for the budget, appropriations, expenditures, and all financial transactions of the Hydrographic Office and its field activities.

THOUSANDS OF SIGNATURES are saved by use of this check-signing machine which stamps an authenticated signature on each check. The Fiscal Division also accounts for, and furnishes information on expenditures and costs of the Office.

ADMINISTRATION



The Administration Division is the "service arm" of the Hydrographer. Its operations comprise a wide variety of tasks essential to the effective and efficient functioning of all organizational components of the Hydrographic Office. Besides administering the civilian personnel program for the Hydrographic Office and its field activities, this division also provides general administrative services, including the custody and management of records; work measurements; telephone service; the receipt and distribution of mail; library and research facilities; security services; employee medical care; safety and accident prevention; editorial service on administrative issuances; and related office management functions.

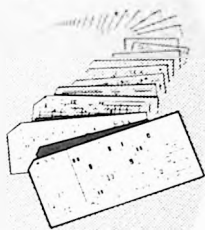


HYDRO'S LIBRARY circulated over 8,000 items during the year to assist the research efforts of the technical and scientific staff of the Office. The staff of the library was doubled during the year.

MEDICAL DISPENSARY treats office personnel who become ill or injured during working hours. The nurses administered more than 18,000 treatments in keeping personnel on the job.



COMPUTATION



The Hydrographic Office is constantly coping with deadlines. Great masses of statistical data must be processed quickly and accurately. Ordinarily, scores of employees would be needed to man the desk calculators required for such computations and calculations. For more than a year, however, the Hydrographic Office has been equipped with electronic calculators which perform these operations more efficiently, and less expensively. With this equipment, it has been possible to facilitate the processing of fiscal and accounting reports, and to undertake many assignments which otherwise would have been too formidable for consideration. Hydrographic, oceanographic, and cartographic information is being computed for entire areas. The computation and tabulation of several scientific projects have been assumed. These include Loran navigation tables, Lorac survey coordinates, sea water densities, under water sound velocities, dynamic depths, grid transformations, and correction chartlets. During 1951, all of these computing and tabulating facilities were combined under a new organizational division: the Division of Computation.

ELECTRONIC CALCULATORS process great masses of accounting, statistical, scientific and mathematical data quickly and accurately. Ordinarily, scores of employees would be needed to man the desk calculators required for such computations and tabulations.



TABULATION of several scientific projects has been assumed by the Division of Computation. These include loran navigation tables, survey coordinates, sea water densities, underwater sound velocities, dynamic depths, grid transformations, and correction chartlets.



Branch Offices

BRANCH HYDROGRAPHIC OFFICES

The first Branch Hydrographic Office was established at Boston, Massachusetts in 1882. Today, there are twenty-two Branch Hydrographic Offices throughout the world.

The Branch Offices play an important part in assisting the Hydrographic Office in Washington. They collect and disseminate navigational information and material and maintain close liaison with commands involved in fleet operation, routing or ship movements. They also provide a direct contact with the merchant marine users of Hydrographic Office products, obtaining a large measure of cooperation from the ship owners, operators, and masters.

Branch Hydrographic Offices are also called upon to conduct training for naval reserve officers undergoing their annual training for Port Director duties, and to conduct classes for merchant marine officers.

LIAISON OFFICE

Located in the National Defense Building (Pentagon), the Hydrographic Liaison Office functions as a Hydrographic Information Center, maintains liaison service for the Hydrographic Office, and also serves as a Hydrographic Office distribution center for the convenience of the various departments of the military establishment and other government agencies in proximity to the National Defense Building. A supply of practically all Hydrographic Office products is maintained at this Office for official issue, or sale for personal use

SALES AGENTS

Four new authorized sales agents were added during the year in Baltimore, Maryland; Jacksonville, Florida; Montevideo, Uruguay; and Stockholm, Sweden. This brings the total to 69 domestic and 32 foreign agents who sell Hydrographic Office products to merchant mariners of the world.

Training

The training program of the Hydrographic Office has many facets. It offers short courses to members of the naval reserve in the special techniques involved in the particular work of this office; maintains a regular training program for navy personnel and for its civilian employees; and participates in the production of unclassified training films for instruction purposes, primarily intended for field personnel.

This year, five naval reserve officers were given a two-week course in basic hydrographic surveying and five naval reservists had two-week training periods in photogrammetry. Twenty Navy personnel and five civilians received instruction in preparation for duties aboard a survey vessel. Thirty-five new civilian trainee employees were given an orientation course in photogrammetry and intensive training in the operation of photogrammetric stereo-plotting instruments. Personnel of this Office took full advantage of the courses in oceanography being offered by Johns Hopkins University.

Three unclassified sound training films, in color, were completed and a fourth is now in production. The three completed films: "The Hydrographic Surveying Operations of the Navy", "Occupying an Oceanographic Station", and "Use of the Bathythermograph" are available for loan to activities conducting work in hydrography or oceanography. The unfinished film, "Hydrography for Charting" is approximately 30 per cent complete and will be added to the list in the near future.

Through its training program, the Hydrographic Office is attempting to build a potential reserve of officers and enlisted men from which the Navy might draw in time of mobilization; to further qualify those already engaged in work for the office; and to increase the possibilities for coordinated efforts with universities, other government agencies, other naval agencies, and the hydrographic offices of other nations.

TRAINING PROGRAM includes courses for Navy personnel and civilian employees. In this photograph, new civilian trainee employees are receiving orientation training.

DISTINGUISHED FOREIGN VISITORS

- Captain Adam, Indonesia
- Mr. Oscar Cucurullo, Director of Military Geographic Service, Dominican Republic
- Dr. G. E. R. Deacon, Director National Institute of Oceanography, Great Britain.
- Dr. H. W. F. Krause, the Netherlands
- LCDR Henri LaCombe, Hydrographic Engineer, French Navy
- Dr. J. R. Longard, Naval Research Establishment, Halifax, Canada
- Mr. Takeo Okubo, Director, Japanese Maritime Safety Agency
- Dr. Arnold Schumacher, German Hydrographic Institute
- Dr. Kanji Suda, Chief Hydrographer, Japanese Hydrographic Office

VISITING GROUPS

- Lake Survey Group, U. S. Army Engineers
- Graduating Class, Massachusetts Maritime Academy
- Graduating Class, U. S. Naval Academy
- Graduating Class, U. S. Navy School of Photogrammetry
- Students of Department of Agriculture Graduate School
- Survey Detachment, 312th Engineers, U. S. Army



Cooperation

The U. S. Navy Hydrographic Office must obtain many different types of information from all parts of the world. To achieve this, it maintains a mutually cooperative exchange of information and facilities with many other government agencies, international organizations, scientific and professional societies, other naval agencies, and a host of groups and individuals interested in the work of the Hydrographic Office.

During 1951, the Hydrographic Office has maintained close liaison and cooperation with each of the organizations listed on this page. This opportunity was welcomed for it has been evidenced again and again that only through the cooperation of others can the Hydrographic Office hope to maintain its present extensive services.

INTERNATIONAL ORGANIZATIONS

- International Hydrographic Bureau, Monaco
- Commission on Cartography,
- Pan-American Institute of Geography and History
- Committee on Weather Ships,
- Association of Physical Geography of the Oceans
- International Conference on Safety of Life at Sea
- International Maritime Consultive Organization
- International Union of Geodesy and Physics

GOVERNMENT AGENCIES

- Central Intelligence Agency
- Civil Aeronautics Administration
- Forest Service, Department of Agriculture
- Military Air Transport Service
- U. S. Air Force Aeronautical Chart and Information Service
- U. S. Army Engineer Corps
- U. S. Army Map Service
- U. S. Coast Guard
- U. S. Coast and Geodetic Survey, Department of Commerce
- U. S. Weather Bureau

SCIENTIFIC AND PROFESSIONAL SOCIETIES

- American Congress on Surveying and Mapping
- American Geophysical Union
- American Society of Photogrammetry
- Association of American Geographers
- Institute of Coastal Engineering
- Institute of Navigation
- Lithographic Technical Foundation
- National Association of Photo-Lithographers
- Society of Limnology and Oceanography



PRINCE OF MONACO is saluted by sideboys as he leaves the USS REHOBOTH, oceanographic survey ship. His visit to the ship was one of the highlights of the Oceanographic Survey Group's visit to the International Hydrographic Bureau in Monaco.

Appendices

APPENDIX 1

PRODUCTION SUMMARY—FISCAL 1951

CHARTS	ITEMS	COPIES
Nautical.....	4, 757	8, 406, 989
Aero.....	608	2, 249, 695
Special Program Air Charts.....	428	1, 295, 714
Special Program Oceanographic Charts.....	62	86, 084
Special Charts for other Bureaus.....	427	1, 251, 950
	5, 855	13, 290, 432
PUBLICATIONS		
Nautical.....	96	274, 686
Aero.....	545	276, 145
Oceanographic.....	59	35, 711
	700	*586, 542
TEXT		
Special Program Text.....	326	468, 477
PERIODICALS		
Nautical.....	746	1, 398, 576
Aero.....	40	130, 971
	786	*1, 529, 547
MISCELLANEOUS		
Regular Program.....	668	1, 026, 653
Special Programs.....	87	106, 944
Damage Control.....	1, 357	121, 691
	2, 112	1, 255, 288
Grand total.....	9, 779	17, 130, 286

*Includes items printed by Government Printing Office.

APPENDIX II

CHARTS, PUBLICATIONS AND PERIODICALS DISTRIBUTED

CHARTS:

Number of different charts		Category	Issued	Copies distributed		1950 Total
1950	1951			Sold	1951 Total	
3,264	3,360	H. O. Nautical.....	2,493,954	492,440	2,986,394	849,187
235	1,413	H. O. Aero.....	1,515,822	679,735	2,195,557	669,026
752	1,112	Other H. O.....	1,289,986	95,871	1,385,857	891,571
1,791	1,956	C. & G. S.....	1,572,798	75,562	1,648,360	1,156,746
1,505	3,042	USAF—Aero.....	1,288,945	13,560	1,302,505	127,264
1,445	1,096	Foreign.....	548,060	45,125	593,185	110,826
451	472	Other Agencies.....	38,757	818	39,575	4,008
9,443	12,451	Total.....	8,748,322	1,400,111	10,148,433	3,808,628

PUBLICATIONS:

Number of different publications		Category	Issued	Copies distributed		1950 Total
1950	1951			Sold	1951 Total	
259	233	H. O. Nautical.....	99,884	65,920	165,804	74,843
43	61	H. O. Aero.....	286,377	3,780	290,157	13,054
80	140	C. & G. S.....	16,636	4,215	20,851	12,901
15	17	Coast Guard.....	2,711	463	3,174	2,828
8	14	USAF—Aero.....	20,265	5	20,270	4,878
18	13	C. A. A. Avia.....	7,905	38	7,943	10,684
37	46	Other Agencies.....	1,766	6	1,772	6,072
460	524	TOTAL.....	435,544	74,427	509,971	125,260

PERIODICALS:

Category	Copies distributed	
	1951	1950
H. O. Nautical.....	1,099,131	945,715
H. O. Aero.....	430,116	259,687
C. A. A. Avia.....	99,299	92,271
C. & G. S.....	12,186	2,348
USAF—Aero.....	146,770	37,926
Misc.....	4,507	2,550
TOTAL.....	1,792,009	1,340,497

Number of nautical charts corrected		Number of hand corrections	
1951	1950	1951	1950
6,014,307	3,283,971	45,936,648	21,989,592

APPENDIX III

BRANCH HYDROGRAPHIC OFFICES

CHARTS, PUBLICATIONS AND PERIODICALS DISTRIBUTED

	Issued	Sold	1951 total	1950 total
Charts.....	95, 109	69, 612	164, 721	54, 929
Publications.....	5, 921	5, 596	11, 517	6, 743
Supp. to Publications.....	9, 594	-----	9, 594	13, 845
Nemedri.....	1, 997	-----	1, 997	2, 096
Hydropacs.....	96, 393	-----	96, 393	40, 765
Notice to Mariners.....	260, 252	-----	260, 252	139, 108
Hydrographic Bulletins.....	69, 522	-----	69, 522	46, 917
Daily Memorandums.....	651, 102	-----	651, 102	759, 505
Misc. Items.....	6, 372	-----	6, 372	4, 976
Total.....	1, 196, 262	75, 208	1, 271, 470	1, 068, 884

PAPERS AND REPORTS DISTRIBUTED

	1951	1950
Bottle Papers.....	15, 373	21, 231
Route Reports.....	6, 788	13, 750
Marine Data Reports.....	7, 366	14, 394
Port Facilities.....	60, 016	13, 230
Current Reports.....	11, 761	18, 236
Misc. Reports.....	2, 386	1, 801
Total.....	103, 690	82, 642

OTHER SERVICES

	1951	1950
Visitors Received.....	31, 534	27, 369
Telephone Inquiries.....	38, 409	30, 647
Vessels Visited.....	5, 180	5, 824
Acknowledgements of Information.....	2, 609	2, 477
Letters sent.....	9, 297	8, 585
Hydrographic Broadcasts.....	3, 723	2, 422
Navigators Instructed.....	2, 310	1, 630
Total.....	93, 062	78, 954

APPENDIX IV

RECAPITULATION OF CIVILIAN PERSONNEL ACTIONS FISCAL YEAR 1951

Total Additions (Appointments and transfer).....	963
Deaths.....	1
Resignations.....	128
Retirements.....	3
Terminations.....	47
Terminations—(Displacement).....	1
Separations—Military Service.....	86
Transfers to other Agencies.....	52
Leave without pay.....	18
Transfers within Navy.....	31
Separation for Cause.....	7
Total Separations.....	374
Net Gain in Personnel—Period 1 July 1950 to 30 June 1951.....	589
Conversions to competitive Civil Service Status.....	92
Grade Promotions.....	408
Ungraded Promotions.....	35
Level adjustments (Ungraded personnel).....	1
Pay Adjustments.....	5
Corrections.....	4
Reassignments.....	190
Name changes.....	14
Change to lower grade.....	28
Title changes.....	11
Periodic Pay Increases (Graded personnel).....	497
Periodic Pay Increases (Ungraded personnel).....	55
Details (Not to exceed 90 days).....	3
Superior accomplishment step increase.....	1
Total Personnel Actions Exclusive of Additions and Separations.....	1,344
Total personnel with Probational or Permanent Status.....	841
Total Personnel with War Service or Temporary Indefinite Appointments.....	644
Total personnel with Temporary Definite Appointments.....	6
Total Civilian Personnel on the Rolls of the Office and its Field Activities as of 30 June 1951.....	1,491

The distribution of Naval and Civilian personnel under the jurisdiction of the Office at the beginning and ending of the year, is shown in the following table:

	1 July 1950			30 June 1951		
	Officer	Enlisted	Civilian	Officer	Enlisted	Civilian
Main Office.....	19	---	868	24	4	1,453
Branch Hydrographic Offices.....	20	27	34	20	30	38
Total.....	39	27	902	44	34	1,491

HYDROGRAPHERS OF THE NAVY

OFFICERS-IN-CHARGE, DEPOT OF CHARTS AND INSTRUMENTS:

Lieutenant LOUIS M. GOLDSBOROUGH	December 1830-March 1833
Lieutenant CHARLES WILKES	March 1833-June 1837
Lieutenant JAMES M. GILLISS	June 1837-July 1842
Lieutenant MATTHEW F. MAURY	July 1842-April 1861
Captain JAMES M. GILLISS	April 1861-April 1865
Rear Admiral CHARLES H. DAVIS	April 1865-August 1866

HYDROGRAPHERS:

Commander THOMAS S. FILLEBROWN	August 1866-July 1868
Captain NAPOLEON B. HARRISON	July 1868-December 1868
Commander EDWARD SIMPSON	December 1868-October 1869
Commodore GEORGE F. EMMONS	October 1869-October 1870
Captain ROBERT H. WYMAN	October 1870-May 1878
Captain SAMUEL R. FRANKLIN	May 1878-July 1880
Captain JOHN C. P. DE KRAFFT	July 1880-June 1883
Commander JOHN R. BARTLETT	June 1883-June 1888
Lieutenant GEORGE L. DYER	June 1888-November 1889
Captain HENRY F. PICKING	November 1889-June 1891
Lieutenant Commander R. CLOVER	June 1891-May 1893
Commander CHARLES D. SIGSBEE	May 1893-April 1897
Commander JOSEPH E. CRAIG	April 1897-January 1900
Commander CHAPMAN C. TODD	January 1900-November 1901
Lieutenant Commander W. H. H. SOUTHERLAND	November 1901-February 1904
Lieutenant Commander H.M. HODGES	February 1904-October 1906
Commander CHARLES C. ROGERS	October 1906-June 1908
Commander ALBERT G. WINTERHALTER	June 1908-January 1910
Commander JOHN J. KNAPP	January 1910-May 1912
Commander GEORGE F. COOPER	May 1912-April 1914
Commander THOMAS WASHINGTON	April 1914-June 1916
Captain THOMAS SNOWDEN	June 1916-October 1917
Rear Admiral SEATON SCHROEDER (Ret.)	October 1917-March 1919
Captain EDWARD SIMPSON	March 1919-June 1920
Rear Admiral LLOYD H. CHANDLER	June 1920-July 1921
Captain LOUIS R. DE STEIGUER	July 1921-January 1922
Captain FREDERIC B. BASSETT	January 1922-July 1925
Captain, Rear Admiral WALTER S. CROSLY	July 1925-August 1927
Commander FRANK H. ROBERTS	August 1927-October 1927
Captain CLARENCE S. KEMPF	October 1927-June 1930
Rear Admiral WALTER R. GHERARDI	June 1930-May 1935
Captain LAMAR R. LEAHY	May 1935-August 1938
Captain, Rear Admiral GEORGE S. BRYAN (Ret.)	August 1938-February 1946
Rear Admiral ROBERT O. GLOVER	February 1946-August 1948
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